

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims :

Claims 1-17 (canceled)

Claim 18. (Currently Amended) A method for fabricating a microstructure, comprising:

providing a substrate having a patterned sacrificial polymer material layer disposed thereon, said patterned sacrificial polymer layer comprising at least a first distinct portion and a second distinct portion;

disposing a framing material layer over onto at least a portion of the sacrificial polymer layer said at least first and second distinct portions such that said framing material layer engages the sacrificial material of each distinct portion;

disposing ~~an~~ a non-sacrificial overcoat layer over onto the said framing material layer such that said overcoat layer is substantially separated from the sacrificial material of said at least first and second distinct portions by said framing material layer, wherein ~~the~~ said overcoat layer is selected from polynorbornenes, epoxides, ~~polyarylenes~~ polyarylene ethers, parylenes and combinations thereof, ~~and wherein the framing material substantially separates the sacrificial polymer layer from the overcoat layer;~~ and

removing the sacrificial polymer material from said at least first and second distinct portions via thermal decomposition such that microstructures are formed.

Claim 19. (Currently Amended) The method of claim 18, wherein ~~the step of removing the sacrificial polymer comprises removing the sacrificial layer to define~~ material creates an air-region within each of the at least first and second distinct portions ~~the overcoat layer, the framing material engaging at least a portion of the air region on an inside surface of the framing material and engaging the overcoat layer on an outside surface of the framing material.~~

Claim 20 (Canceled)

Claim 21. (Currently Amended) The method of claim 18, wherein ~~the~~ said framing material layer is selected from SiO_2 , Si_3N_4 , SiO_xN_y (where x is from 0.01 to 2 and y is from 0.01 to 1.33), and Al_2O_3 .

Claim 22. (Currently Amended) The method of claim 18, wherein ~~the sacrificial polymer material~~ is selected from ~~polyimides, polynorbornenes, epoxides, polyarylenes ethers, polyarylenes, inorganic glasses~~ polynorbornenes, polycarbonates, polyethers, polyesters, functionalized compounds of each, and combinations thereof.

Claim 23. (Currently Amended) A method for fabricating a microstructure, comprising:

providing a structure comprising

a substrate,

an overcoat layer, ~~wherein the overcoat layer is~~
comprising a material selected from polynorbornenes, epoxides,

~~polyarylenes~~ polyarylene ethers, parylenes, and combinations thereof,

a plurality of sacrificial polymer layer portions disposed in an area within the overcoat layer, each of such portions comprising a sacrificial polymer material selected from polycarbonates, polyethers, polyesters, functionalized compounds of each, and combinations thereof, and

a framing material layer disposed over each sacrificial polymer portion and engaging one or more sides of each sacrificial polymer portion on the inside of the framing material layer and engaging the overcoat layer on the outside of the framing material layer where covering all sacrificial polymer portions of the sacrificial polymer layer a framing material that would otherwise contact the overcoat layer are engaged; and

removing the sacrificial polymer ~~layer~~ material from each of the sacrificial polymer portions via thermal decomposition to form an air-region within the area defined by the sacrificial material therein, such that the inside of said framing material layer engages each air-region and the outside of said framing material layer engages the overcoat layer.

Claim 24. (Currently Amended) The method of claim 23, wherein the sacrificial ~~layer~~ polymer material is solvent-incompatible with the material of the overcoat layer.

Claims 25 – 26 (Canceled)

Claim 27 (Canceled)

Claim 28. (Currently Amended) The method of claim 18, wherein the ~~step of removing the sacrificial polymer comprises heating~~ the at least first and second distinct portions to a first temperature greater than or equal to the ~~at least a portion of the microstructures to decomposition~~ temperature of the sacrificial polymer material.

Claim 29. (Currently Amended) The method of claim 28, wherein the ~~step of removing the sacrificial polymer~~ further comprises, ~~after heating at least the portion of the microstructure to the decomposition temperature of the sacrificial polymer,~~ maintaining the decomposition first temperature for ~~about~~ at least one to two ~~1-2~~ hours.

Claim 30. (Currently Amended) The method of claim ~~23~~ 18, further comprising: where removing the sacrificial polymer material comprises via thermal decomposition heating the plurality of sacrificial polymer portions to a first temperature ~~comprises heating to decomposing the sacrificial polymer layer at a temperature of about 50 to 425 °C~~ equal to or greater than the decomposition temperature of the sacrificial polymer material for at least one to two hours.

~~allowing thermal decomposition products to diffuse through the overcoat layer leaving a virtually residue free hollow structure.~~

Claim 31. (Currently Amended) The method of claim 23 48, wherein ~~the step of removing the sacrificial polymer via thermal decomposition comprises decomposing the sacrificial polymer layer at a temperature of about 50 to 425 °C said framing material layer is selected from SiO_2 , Si_3N_4 , SiO_xN_y (where x is from 0.01 to 2 and y is from 0.01 to 1.33), and Al_2O_3 .~~